

## REMARKS

Claims 2 through 10 are pending in this application. Claim 1 is cancelled herein. Claims 2 through 10 are amended herein. Reconsideration is requested based on the foregoing amendment and the following remarks.

### Priority:

The Applicant thanks the Examiner for acknowledging receipt of the papers submitted under 35 U.S.C. §119(a)-(d).

### Objection to the Specification:

The Abstract of the Disclosure has been objected to for containing legal phraseology. A new Abstract devoid of legal phraseology consequently accompanies this response. No new matter has been added. Withdrawal of the objection is earnestly solicited.

### Rejections under 35 U.S.C. § 112:

Claims 2 through 10 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 2 through 10 have been amended to more clearly define them. No new matter has been added.

With respect to the objection to the phrase "or" in claims 4, 8 and 9, it is submitted that such an alternative limitation does not render the claims indefinite. See, e.g. M.P.E.P. § 2173(h).

M.P.E.P. § 2173(d), to which the Office Action refers, is actually concerned with exemplary language such as "for example" and "such as", rather than limitations in the alternative. Withdrawal of the rejection of claims 2 through 10 is earnestly solicited.

Rejections under 35 U.S.C. § 102:

Claims 2 through 10 have been rejected under 35 U.S.C. § 102(e) as anticipated by Nakamura et al., US 6,280,304. The rejection is respectfully traversed. Reconsideration of the rejection of claims 2 through 10 is earnestly solicited.

The present invention relates to a polishing device provided with a table and a rotary drive device for driving the table.

The term polishing device means a polishing table, a table for CMP (Chemical Mechanical Polishing) or polisher as described on page 1 of the present specification. The polishing device is used to flatten an end face of a semiconductor wafer or an end face of liquid crystal glass.

The present invention is characterized in that it uses a special reduction gear, i.e., traction drive type reduction gear which also includes friction type drive reduction gear. Using such a special reduction gear, the polishing table can achieve a large output torque and high rotational speed precision while it performs low vibration and low noise. Thus, the polishing table can flatten an end face of a semiconductor wafer or an end face of liquid crystal glass with high precision.

Amended claim 2 recites, in pertinent part:

"the externally contacting shaft formed in a hollow cylinder has a diameter which is a little bit larger than a diameter of an imaginary circle which externally contacts with a plurality of intermediate shafts whereby pressing load is created by means of deformation of the hollow cylinder."

Nakamura neither teaches, discloses, nor suggests a traction drive type reduction gear in which a pressing load is created by deformation of a hollow cylinder, as recited in amended claim 2. Nakamura, rather, relies on a conventional reduction gear system 69 to transmit power from motor 70 to upper plate 20, lower plate 30, etc., as described at column 2, lines 24 through 28. Nakamura is concerned primarily with a plate supporting system, as described at column 3, line 46, and thus dispenses with a description of the internal workings of reduction gear system 69 altogether. In particular, Nakamura uses a number of gears, i.e., an external gear 50, a gear 50b, gear 52, gear 52b, gear 54b, gear 61, gear 62, idle gear 63 engaging with the gear 54b and a gear 64, to transmit the power of the motor 70 via the reduction gear system 69 to the upper plate 20 and the lower plate 30. Since Nakamura uses gears to transmit the power, it is apparent that Nakamura does not address at all the problem of vibration and noise caused by a gear transmission.

Amended claim 2 is thus submitted to be allowable. Withdrawal of the rejection of amended claim 2 is earnestly solicited.

Amended claims 3 through 7 depend from amended claim 2 and add additional distinguishing elements. Amended claims 3 through 7 are thus also submitted to be allowable. Withdrawal of the rejection of claims 3 through 7 is earnestly solicited.

Amended claim 8 recites, in pertinent part:

"an internally contacting cylinder with which the intermediate shafts internally contact."

Nakamura neither teaches, discloses, nor suggests a traction drive type reduction gear including an internally contacting cylinder with which the intermediate shafts internally contact, as recited in amended claim 8. Amended claim 8 is thus submitted to be allowable. Withdrawal of the rejection of amended claim 8 is earnestly solicited.

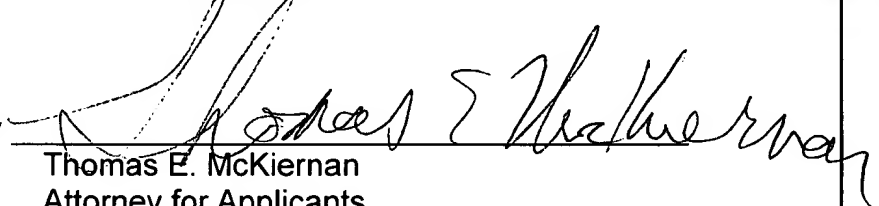
Amended claims 9 and 10 depend from amended claim 8 and add additional distinguishing elements. Amended claims 9 and 10 are thus also submitted to be allowable. Withdrawal of the rejection of claims 9 and 10 is earnestly solicited.

Conclusion:

Accordingly, in view of the reasons given above, it is submitted that all claims 2 through 10 are allowable over the prior art. Since the objections to the specification have been addressed and the claims have been amended to overcome the rejections based on 35 U.S.C. § 112, second paragraph, it is submitted that all of claims 2 through 10 are now allowable. Allowance of all claims 2 through 10 and of this entire application are therefore respectfully requested.

Respectfully submitted,

By

A handwritten signature in dark ink, appearing to read "Thomas E. McKiernan", is written over a horizontal line.

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Version with markings to show changes made.

Abstract of the Disclosure

A [rotary drive device of a] polishing device [such as a polishing table, a table for CMP or a rotary drive device of a polisher which is used to flatten an end face of a semiconductor wafer or an end face of liquid crystal glass, wherein disposed is] having a table connected to a traction drive type reduction gear[, which]. The reduction gear includes [comprises:] an externally contacting shaft formed in a ring-shaped hollow cylinder and arranged at the center; a plurality of intermediate shafts which are equidistantly disposed at the circumference of the externally contacting shaft, [and] at least one of which is an input shaft; and an internally contacting cylinder with which the intermediate shafts internally contact, and under free conditions, the externally contacting shaft formed in a hollow cylinder has a diameter which is a little bit larger than a diameter of an imaginary circle which externally contacts with a plurality of intermediate shafts whereby pressing load is created by means of deformation of the hollow cylinder.

[Fig. 1]

2. (Amended) A [rotary drive device of a] polishing device [according to Claim 1, wherein the] having a rotatable table connected to a traction drive type reduction gear, which gear comprises:

an externally contacting shaft formed in a ring-shaped hollow cylinder and arranged at the center;

a plurality of intermediate shafts which are equidistantly disposed at [the] a circumference of the externally contacting shaft, and at least one of which is an input shaft; and

an internally contacting cylinder with which the intermediate shafts internally contact, and under free conditions, the externally contacting shaft formed in a hollow cylinder has a diameter which is a little bit larger than a diameter of an imaginary circle which externally contacts with a plurality of intermediate shafts whereby pressing load is created by means of deformation of the hollow cylinder.

3. (Amended) A [rotary drive device of a] polishing device according to Claim 2, wherein the internally contacting cylinder is formed in co-axially arranged double hollow rings, and that an inside ring and an outside ring of the double hollow rings are coupled with each other by means of a coupling member.

4. (Amended) A [rotary drive device of a] polishing device according to Claim 2, wherein the internally contacting cylinder is coupled with the [polishing] table[, the table for CMP or the polisher] by means of at least one of a pin or a key.

5. (Amended) A [rotary drive device of a] polishing device according to Claim 2, wherein the internally contacting cylinder is formed in an inner race of [the] a main bearing.

6. (Amended) A [rotary drive device of a] polishing device according to Claim 5, wherein the main bearing is formed by two lines of angular ball bearings, and the outer race of the main bearing is integrated with a housing of the polishing device.

7. (Amended) A [rotary drive device of a] polishing device according to Claim 2, wherein an electric motor is coupled with [an] the input shaft, and the input shaft is offset more greatly than a radius of the electric motor from the center of the externally contacting shaft.

8. (Amended) A [rotary drive device of a] polishing device having a table connected to a [according to Claim 1, wherein the] traction drive type reduction gear, which gear comprises:

an externally contacting shaft which is disposed at the center and which serves as an input shaft;

a plurality of intermediate shafts equidistantly disposed at [the] a circumference of the externally contacting shaft;  
an internally contacting cylinder with which the intermediate shafts internally contact; and  
a carrier which it rotatably supports the intermediate shafts, and [the] output is taken out from one of the carrier or the internally contacting cylinder.

9. (Amended) A [rotary drive device of a] polishing device according to Claim 8, wherein the externally contacting shaft is offset from the rotational center of the [polishing] table, [the table for CMP or the polisher,] an output shaft coupled to the carrier is disposed on an axis of an externally contacting shaft, and the output shaft is coupled with the table [the polishing table, the table for CMP or the polisher] by means of a power transmission member.

10. (Amended) A [rotary drive device of a] polishing device according to Claim 9, wherein an electric motor is coupled with the externally contacting shaft which serves as an input shaft.